

What is claimed is:

- 1 1. A cryogenic catheter comprising:
2 an elongate outer member; and
3 a plurality of inner members disposed within the elongate outer member, the inner
4 members defining at least one cryogenic fluid path through the outer member.
- 1 2. The cryogenic catheter of claim 1, wherein at least one of the plurality of inner
2 members has at least one controllable opening formed thereon to selectively release
3 cryogenic fluid.
- 1 3. The cryogenic catheter of claim 2, wherein the inner members have a plurality of
2 controllable openings positioned in a staggered configuration.
- 1 4. The cryogenic catheter of claim 2, wherein the plurality of inner members includes
2 an overtube and an injection tube slidably disposed to one another.
- 1 5. The cryogenic catheter of claim 4, wherein in one configuration at least one
2 opening formed on the overtube aligns with at least one opening on the injection tube.
- 1 6. The cryogenic catheter of claim 2, wherein the plurality of inner members includes
2 an overtube and an injection tube which are rotatable with respect to one another.
- 1 7. The cryogenic catheter of claim 6, wherein in one configuration at least one
2 opening on the overtube aligns with at least one opening on the injection tube.
- 1 8. The cryogenic catheter of claim 2, wherein at least one of the plurality of openings
2 is controlled by a valve.
- 1 9. The cryogenic catheter of claim 8, wherein the valve is a miniaturized mechanical
2 valve.

1 10. The cryogenic catheter of claim 1, wherein at least one of the plurality of the
2 inner members has at least one controllable opening formed thereon, each opening
3 positioned proximate at least one electrode ring disposed on an outer surface of the
4 elongate outer member.

1 11. The cryogenic catheter of claim 10, wherein at least one opening releases
2 cryogenic fluid so as to alter the temperature of a region proximate to the electrode ring.

1 12. The cryogenic catheter of claim 10, wherein the openings are selectively and
2 independently controllable so as to alter the temperature of a region proximate the
3 electrode ring.

1 13. The cryogenic catheter of claim 10, wherein the catheter allows the creation of at
2 least one continuous linear cryolesion.

1 14. The cryogenic catheter of claim 10, wherein the catheter allows the creation of a
2 single localized cryolesion.

1 15. The cryogenic catheter of claim 10, wherein the catheter allows the creation of at
2 least two distinct cryolesions.

1 16. The cryogenic catheter of claim 1, further comprising an array of controllable
2 openings adapted to release cryogenic fluid within the elongate outer member for
3 deployment along a length of the outer member.

1 17. The cryogenic catheter of claim 16, wherein at least one opening releases
2 cryogenic fluid to create a single lesion.

1 18. The cryogenic catheter of claim 16, wherein a plurality of openings release
2 cryogenic fluid simultaneously to create a plurality of discontinuous lesions.

1 19. The cryogenic catheter of claim 18, wherein a plurality of openings release
2 cryogenic fluid simultaneously to create a single continuous linear lesion.

1 20. The cryogenic catheter of claim 16, wherein a plurality of openings release
2 cryogenic fluid at different times to create a plurality of discontinuous lesions.

1 21. The cryogenic catheter of claim 20, wherein a plurality of openings release
2 cryogenic fluid at different times to create a single continuous linear lesion.

1 22. The cryogenic catheter of claim 1, wherein a plurality of openings release
2 cryogenic fluid to increase the thermal power of the device.

1 23. A cryogenic catheter comprising:
2 an elongate outer member;
3 a plurality of inner members disposed within the elongate outer member, the inner
4 members having a plurality of controllable openings formed thereon for the selective
5 release of cryogenic fluid; and
6 a plurality of electrode members disposed on an external surface of the outer
7 member, at least one electrode member positioned proximate at least one controllable
8 opening.